

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Parasites 2

Class Nematoda

Phylum: Nematelminthes
Class: Nematoda

***General characters:**

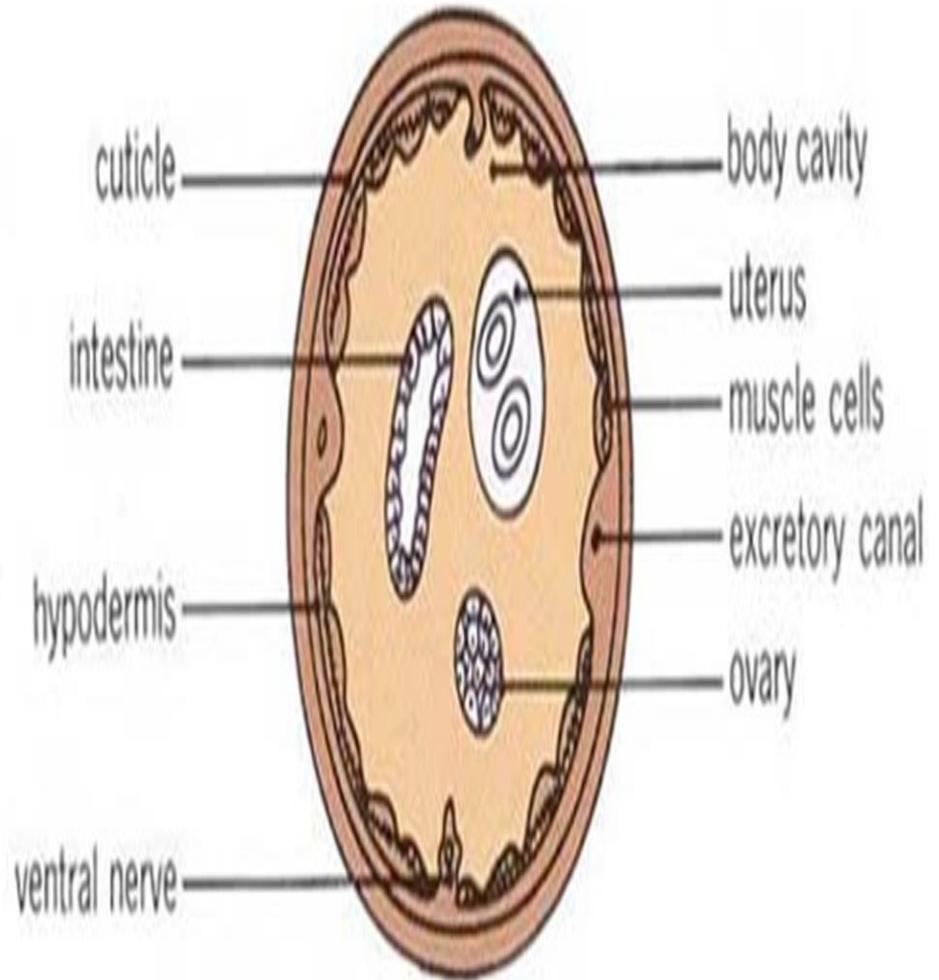
- (1) Elongated, unsegmented, cylindrical worms with tapering ends.
- (2) Bilaterally symmetrical.
- (3) Sex is separate.
- (4) Male is shorter than female & has curved post. end.
- (5) Female has straight post. end.
- (6) The body is covered by a cuticle (resist the digestive Juices and enzymes of the host).



Cross section of nematodes

➤ The body wall consists of three layers:- cuticle, hypodermis & muscle layer.

➤ The body cavity contains body fluid in which lie different systems e.g. digestive, & reproductive



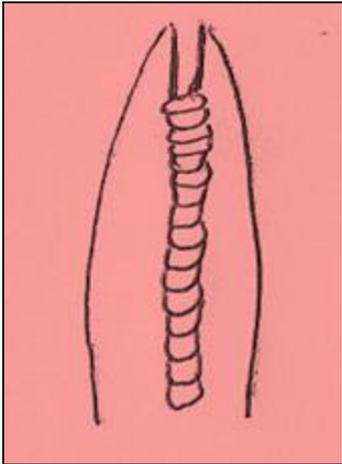
Body system

Digestive system

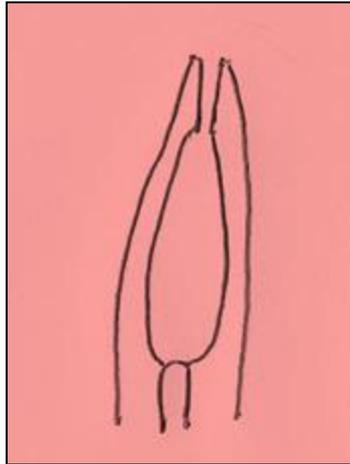
A simple tube starting with mouth and ends by anus.

1-Mouth: Anterior provided with the lips, teeth, plates and sensory papillae.

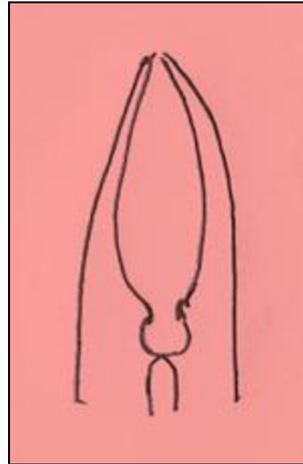
2-Oesophagus: (Cellular or muscular) → intestine → rectum terminates at anus that opens ventrally in female near the posterior end and joins to the genital opening and opens in cloaca in male.



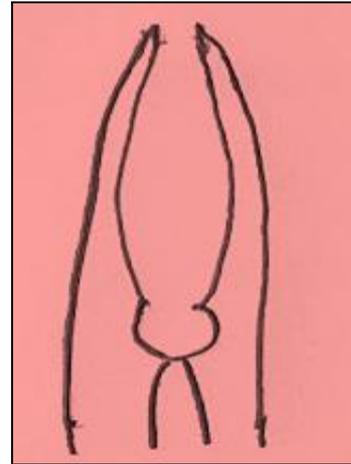
Cellular



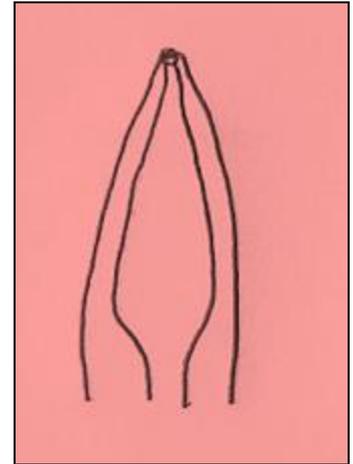
Club



Double
bulbed



Rabbitiform

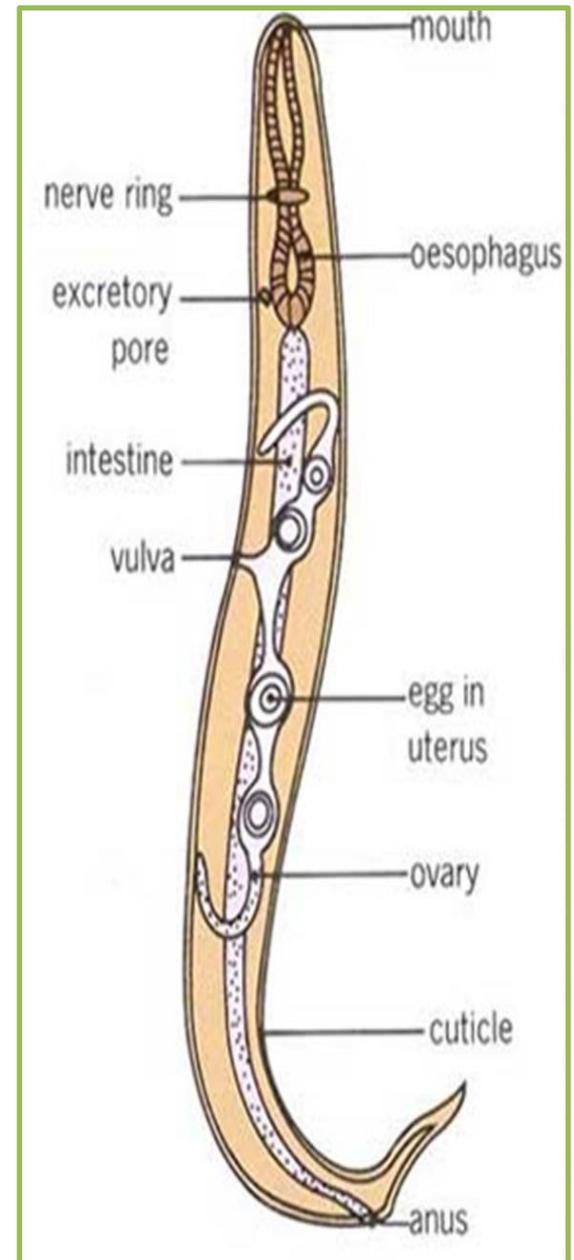


Cylindrical

❖ **Excretory system:** Two lateral excretory canals connected by a transverse tube → open by excretory pore in the cervical region at the level of oesophagus.

❖ **Nervous system:** Consists of a nerve ring surrounding the oesophagus → nerve trunks extend ventrally and dorsally.

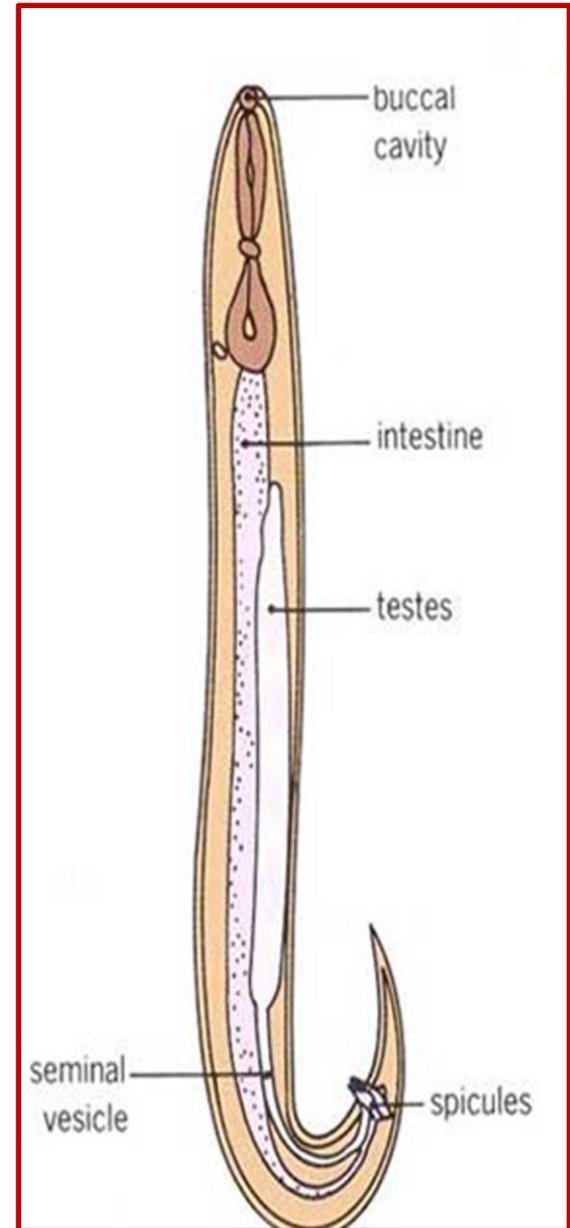
❖ **Reproductive system:** a-The female has two sets (tubes) of genitalia. Each consists of ovary → oviduct → seminal receptacle → uterus. The two uteri join to form one vagina that opens ventrally by vulva.



Female

b-The male has one set of genitalia formed of one coiled tube differentiated into a testis → vas deferens → seminal vesicle & ejaculatory duct that terminates with the rectum in the **cloaca**.

❖ Male has accessory copulatory organs as spicules, papillae, bursa, cement glands or gubernaculums.



Classification of nematodes

According to habitat

A) Intestinal nematodes (Adults in the intestine)

B) Tissue nematodes

Adult in tissues
-*Filariae*

Larva in tissues
-*Trichinella spiralis*
-*Ancylostoma caninum*
-*Ancylostoma braziliense*
-*Toxocara canis & cati*

Small intestine of
dogs & cats

Large intestine of man

Small intestine of man

-*Toxocara canis & cati*
(Viseral larva migrans)
-*Ancylostoma caninum*
-*Ancylostoma braziliense*
(Cutaneous larva migrans)

-*Enterobius vermicularis*
-*Trichuris trichiura*

-*Ascaris lumbricoides*
-*Ancylostoma duodenale*
-*Necator americanus*
-*Strongyloides stercoralis*
-*Trichinella spiralis*
-*Capillaria hillipinensis*

Nematodes of medical importance

Intestinal

Tissue & Blood

Small intestine

□ With tissue stage:

- *Ascaris lumbricoides*
- *Ancylostoma duodenale*
- *Necator americanus*
- *Strongyloides stercoralis*
- *Trichinella spiralis*

• Without tissue stage:

- *Enterobius vermicularis*
- *Trichuris trichiura*

Large int.

- *Wuchereria bancrofti*
- *Brugia malayi*
- *Loa loa*
- *Onchocerca volvulus*
- *Dracunculus medinensis*
- *Trichinella spiralis*

□ Larva migrans:

- *Ancylostoma spp.*
- *Toxocara spp.*

Nematodes of medical importance

Intestinal

Tissue & Blood

Small intestine

□ With tissue stage:

- Egg
- Larva (penetration)
- Larva (penetration)
- Larva (penetration)
- *Cyst (Encysted larva)*

• Without tissue stage:

- Egg
- Egg

Large int.

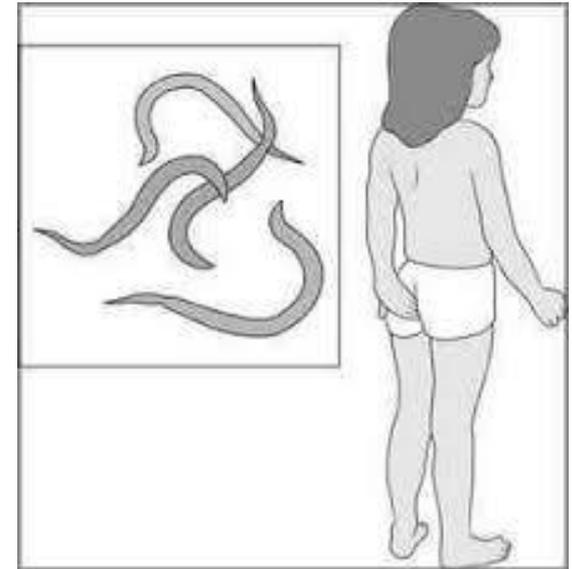
- Filariform Larav
- *Trichinella spiralis*

□ Larva migrans:

- *Ancylostoma spp.*
- *Toxocara spp.*

Enterobius vermicularis (pin worm)

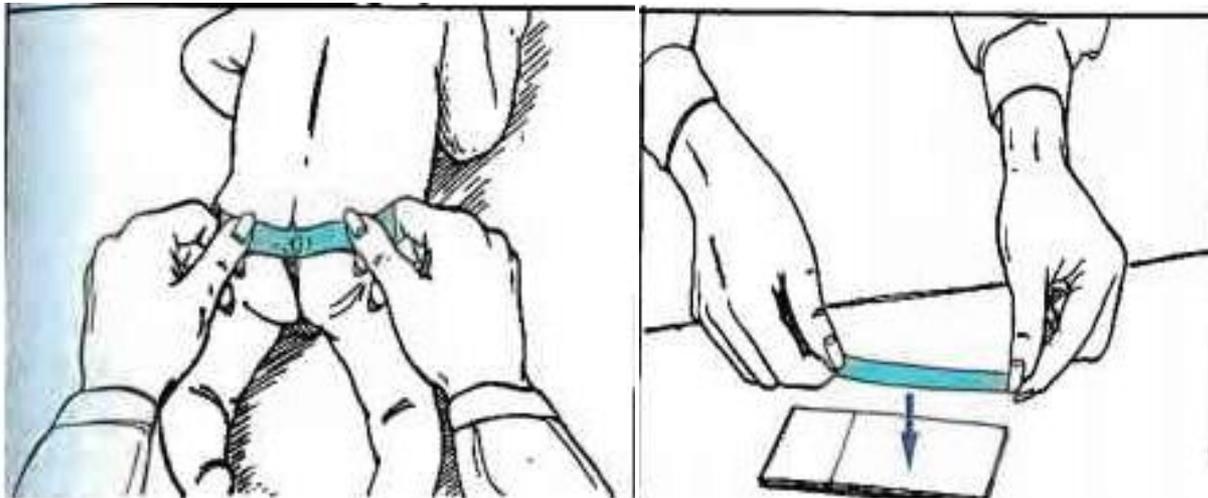
- **Location of adult:** Large intestine of man
- **Infective stage:** Embryonated egg
- **Mode of transmission:** Ingestion of food contaminated with embryonated egg or autoinfection via nails scratching the perianal region
- **Disease:** Enterobiasis



Enterobius vermicularis (pin worm)

Diagnosis

- Recovery and identification of eggs or adults from the perianal region utilizing the cellophane tape preparation.
- Specimens must be collected the first thing in the morning upon waking, especially before bathing or bowel movements.
- Eggs are rarely found in fecal samples because release is usually external to the intestines.



Laboratory Diagnosis- *Enterobius vermicularis* (Pin Worm)

Female
(10mm)
Posterior
end is
straight
with long
pointed
tail (4X)



Male
(5mm):
Posterior
end is
curved
with one
spicule



Egg: (IS)(DS)
Planoconvex or
D-shaped egg.
embryonated
(contain a
larva).



Thank You



